

AMENDMENTS TO THE CLAIMS

Claim 1 (Cancelled)

Claim 2 (Currently Amended) A wireless network control system comprising:

a plurality of base stations that detect and communicate with a mobile terminal;

a plurality of relay stations, each of the plurality of relay stations ~~station~~ being associated with a respective base station of the plurality of base stations and being communicatively connected to the respective base station, and each of the plurality of relay stations ~~station~~ relaying a communication between the respective base station and the mobile terminal; and

a wireless network control apparatus that controls communication between the plurality of base stations and the mobile terminal,

wherein the wireless network control apparatus comprises;

a management table that stores information (i) identifying the association between each of the plurality of relay stations and the respective base station associated therewith, and (ii) identifying a relationship between a relay station of the plurality of relay stations that is communicatively connectable with a base station of the plurality of base stations that is not associated therewith ~~related to a relay station, of the plurality of relay stations, that can be communicatively connected to the respective base station, the stored information related to the relay station being stored in relation to the respective base station;~~

a search section that, when more than one base station of the plurality of the base stations detect the mobile terminal through the relay station associated therewith, searches for a base station, from the base stations that detected the mobile terminal, that can be communicatively connected to all of the respective ~~respective~~ relay stations associated with the base

stations that detected the mobile terminal, ~~the search section performing the search based on the~~
information stored in the management table; and

a control section that allows the communication connection to be established between the base station identified by the search and the respective relay stations associated with the base stations that detected the mobile terminal and that can be communicatively connected to the base station identified by the search,

wherein the base station identified by the search comprises a combining section that performs diversity combining by combining radio signals received from the mobile terminal through the respective relay stations, and

wherein, when more than one base station of the plurality of base stations detect the mobile terminal in an accommodation area, the base station identified by the search (i) establishes the communication connection to a relay station associated with another base station that detected the mobile station, and (ii) subsequently performs the diversity combining by combining the radio signals received from the mobile terminal through the relay station associated with the base station identified by the search and radio signals received from the mobile terminal through the relay station associated with the another base station.

Claim 3 (Previously Presented) The wireless network control system according to claim 2 wherein, when the mobile terminal is detected based on information indicating a radio field intensity received from the mobile terminal, the search section searches for a base station that can be communicatively connected to relay stations that have relayed the information indicating the radio field intensity.

Claim 4 (Previously Presented) The wireless network control system according to claim 2 wherein the control section of the wireless network control apparatus disconnects a communicative connection between a base station other than the base station identified by the search and the respective relay station associated therewith.

Claim 5 (Previously Presented) The wireless network control system according to claim 2 wherein:

each base station comprises a relay-station-information transmission section that transmits information, to the wireless network control apparatus, indicating relay stations to which the respective base station can be communicatively connected; and the wireless network control apparatus comprises a management-table update section that updates the management table based on the information transmitted from the relay-station-information transmission section of each base station.

Claim 6 (Currently Amended) A wireless network control system comprising:

a plurality of base stations that detect and communicate with a mobile terminal; and a plurality of relay stations, ~~each of the plurality of relay stations~~ station being associated with a respective base station of the plurality of base stations and being communicatively connected to the respective base station, and ~~each of the plurality of relay stations~~ station relaying a communication between the respective base station and the mobile terminal;

wherein each respective base station of the plurality of base stations comprises:

an inter-base station communication section for communicating with another base station of the plurality of base stations;

a management table that stores information (i) identifying the association between the respective base station and the relay station associated therewith, and (ii) identifying a relationship between a relay station of the plurality of relay stations that is not associated with the respective base station, but is communicatively connectable with the respective base station related to a relay station, of the plurality of relay stations, that can be communicatively connected to the respective base station;

a determination section that, when the mobile terminal is detected by the respective base station, determines whether or not the another base station that is in communication with the mobile terminal to detect the mobile terminal exists, the determination being based on information obtained from the another base station by communication using the inter-base station communication section;

a search section that, when the another base station that is in communication with the mobile terminal detected by the respective base station is determined to exist, searches for a base station, from the base stations that detected the mobile terminal, that can be communicatively connected to all of the relay stations ~~station~~ associated with the ~~respective base stations that detected the mobile terminal, station and a relay station associated with the another~~ base station that communicates with the mobile terminal, the search section performing the ~~search~~ based on the information stored in the management table;

a control section that communicates a control signal through the inter-base station communication section such that the communication connection is established between the base station identified by the search, and the respective relay stations that can be communicatively connected to the base station identified by the search; and

a combining section that performs a diversity combining by combining radio signals received from the mobile terminal through the respective relay stations,

wherein, when more than one base station of the plurality of base stations detect the mobile terminal in an accommodation area, the base station identified by the search (i) establishes the communication connection to a relay station associated with another base station that detected the mobile terminal, and (ii) subsequently performs the diversity combining by combining the radio signals received from the mobile terminal through the relay station associated with the base station identified by the search and radio signals received from the mobile terminal through the relay station associated with the another base station.

Claim 7 (Previously Presented) The wireless network control system according to claim 6,

wherein, when the mobile terminal is detected based on information indicating a radio field intensity received from the mobile terminal, the determination section determines whether or not another base station that received the information indicating the radio field intensity of the mobile terminal exists, and

wherein the search section searches for a base station that can be communicatively connected to a relay station that has relayed the information indicating the radio field intensity.

Claim 8 (Previously Presented) The wireless network control system according to claim 6,

wherein the control section of the base station identified by the search communicates the control signal through the inter-base station communication section such that the communication connection between a base station other than the base station identified by the search and the respective relay stations is disconnected.

Claim 9 (Previously Presented) The wireless network control system according to claim 6 wherein the base station identified by the search transmits information on the communication connection with the mobile terminal within an accommodation cell to the another base station through the inter-base station communication section.

Claim 10 (Currently Amended) A wireless network control apparatus that controls a radio access network having a plurality of base stations that detect and communicate with a mobile terminal, and having a plurality of relay stations, ~~each of the plurality of relay stations~~ being associated with a respective base station of the plurality of base stations and being communicatively connected to the respective base station, and ~~each of the plurality of relay stations~~ relaying a communication between the respective base station and the mobile terminal, the wireless network control apparatus comprising:

a management table that stores information (i) identifying the association between each of the plurality of relay stations and the respective base station associated therewith, and (ii) identifying a relationship between a relay station of the plurality of relay stations that is communicatively connectable with a base station of the plurality of base stations that is not associated therewith ~~related to a relay station, of the plurality of relay stations, that can be communicatively connected to the respective base station, the stored information related to the relay station being stored in relation to the respective base station;~~

a search section that, when more than one base station of the plurality of base stations detect the mobile terminal through the relay station associated therewith, searches for a base station, from the base stations that detected the mobile terminal, that can be communicatively

connected to ~~all of the respective~~ relay stations associated with the base stations that detected the mobile terminal, ~~the search section performing the search~~ based on the information stored in the management table; and

a control section that, in order to allow the base station identified by the search to perform diversity combining by combining radio signals received from the mobile terminal, the received radio signals being relayed by the relay stations associated with the base stations that detected the mobile terminal, respectively, (i) establishes the communication connection between the base station identified by the search and the respective relay stations, and (ii) allows the radio signals to be transmitted from the respective relay stations to the base station identified by the search.

Claim 11 (Currently Amended) A base station that can communicate with a mobile terminal through a relay station associated therewith, the base station comprising:

an inter-base station communication section for communicating with another base station;

a management table that stores information (i) identifying the association between the base station and the relay station associated therewith, and (ii) identifying a relationship between another relay station that is not associated with the base station, but is communicatively connectable with the base station ~~related to a relay station that is associated with the base station, and stores information related to a relay station that is associated with the another base station and can be communicatively connected to the base station;~~

a determination section that, when the mobile terminal is detected by the base station, determines whether or not the another base station that is in communication with the mobile terminal through a relay station associated therewith to detect the mobile terminal exists, the

determination being based on information obtained from the another base station by communicating with the another base station using the inter-base station communication section;

a search section that, when the another base station that is in communication with the mobile terminal detected by the base station is determined to exist, searches for a base station that can be communicatively connected to the relay station associated with the base station that detected the mobile terminal and can be communicatively connected to the relay station associated with the another base station determined to exist by the determination section, ~~the search section performing the search based on the~~ information stored in the management table;

a control section that communicates a control signal through the inter-base station communication section such that the communication connection is established between the base station identified by the search and, as the respective relay stations, the relay station associated with the base station and the relay station associated with the another base station; and

a combining section that performs a diversity combining by combining radio signals received from the mobile terminal through the respective relay stations.

Claim 12 (Cancelled)

Claim 13 (Currently Amended) A wireless network control method that controls a radio access network having (i) a plurality of base stations that detect and communicate with a mobile terminal, and (ii) a plurality of relay stations, each of the plurality of relay stations ~~station~~ being associated with a respective base station of the plurality of base stations and being communicatively connected to the respective base station, and each of the plurality of relay

~~stations-station~~ relaying a communication between the respective base station and the mobile terminal, the wireless network control method comprising:

a mobile-terminal detection step of detecting the mobile terminal;

a search step of, when more than one base station of the plurality of base stations detect, in the mobile-terminal detection step, the mobile terminal through the relay station associated therewith ~~in the mobile-terminal detection step,~~ searching, based on a management table, for a base station of the base stations that detected the mobile terminal, wherein the base station identified by the searching is a base station that can be communicatively connected to all of the ~~respective~~ relay stations associated with the base stations that detected the mobile station, and wherein the management table stores information (i) identifying the association between each of the plurality of relay stations and the respective base station associated therewith, and (ii) identifying a relationship between a relay station of the plurality of relay stations that is communicatively connectable with a base station of the plurality of base stations that is not associated therewith ~~related to relay stations that can be communicatively connected to respective base stations, the stored information related to the relay stations being stored in relation to the respective base stations;~~ and

a control step of, in order to allow the base station identified by the searching to perform a diversity combining by combining radio signals received from the mobile terminal, (i) relaying the radio signal through the relay stations associated with the base stations that detected the mobile station, respectively, by establishing the communication connection between the base station identified by the searching and the respective relay stations, and (ii) allowing the radio signals to be transmitted from the respective relay stations to the base station identified by the searching.

Claim 14 (Currently Amended) A wireless network control method that controls a radio access network having (i) a plurality of base stations that detect and communicate with a mobile terminal, and (ii) a plurality of relay stations, each of the plurality of relay stations-station being associated with a respective base station of the plurality of base stations and being communicatively connected to the respective base station, and each of the plurality of relay stations-station relaying a communication between the respective base station and the mobile terminal, the wireless network control method comprising:

using a first base station of the plurality of base stations to detect the mobile terminal;
a determination step of, when the first base station detects the mobile terminal, determining whether or not another base station of the plurality of base stations that is in communication with the mobile terminal to detect the mobile terminal exists, the determination being made based on information obtained from other base stations of the plurality of base stations;

a search step of, when the another base station that is in communication with the mobile terminal detected by the first base station is determined to exist, searching, based on a management table, for a base station, from the base stations that detected the mobile terminal, that can be communicatively connected to the relay station associated with the first base station and can be communicatively connected to a relay station of the plurality of relay stations that is associated with the another base station determined to exist in the determination step, wherein the management table stores information (i) identifying the association between the first base station and the relay station associated therewith, and (ii) identifying a relationship between a relay station of the plurality of relay stations that is communicatively connectable with the first

~~base station and that is not associated with the first base station related to the relay station associated with the first base station and the relay station associated with the another base station and can be communicatively connected to the first base station;~~

a control step of communicating a control signal through an inter-base station communication section, such that the communication connection is established between the base station identified by the searching and the respective relay station associated with the first base station and the respective relay station associated with the another base station; and

a combining step of performing diversity combining by combining radio signals received from the mobile terminal through a plurality of relay stations.